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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,106	07/14/2000	Mark B. Solomon	SOL00-03	6526
7590 08/25/2004			EXAMINER	
SolVisions Technologies Int'l 82 Albemarle Road Norwood, MA 02062			GARLAND, STEVEN R	
			ART UNIT	PAPER NUMBER
			2125	

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/616,106

Applicant(s)

SOLOMON, MARK B.

Examiner

Steven R Garland

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 63,64,66-68,70 and 71 is/are allowed.
- 6) ☒ Claim(s) 1-10,12-17,21-31,33-38,42,43,45-53,55-62,65 and 69 is/are rejected.
- 7) ☒ Claim(s) 11,18-20,32,39-41,44 and 54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. The finality of the previous office action is withdrawn, the amendment submitted 7/22/04 has been entered.

2. The indicated allowability of claims 1-52 is withdrawn in view of the newly discovered reference(s) to Ben-Yaakov WO 00/25368. Rejections based on the newly cited reference(s) follow.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10, 12,13,15-17,21-31,33,34,36-38,42,43, 45-51, 53, and 55-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gullapalli 6,424,076 in view of Ben-Yaakov WO 00/25368 .

Gullapalli teaches a deformable mirror system, connecting different actuators of the mirror to different amplifiers, use of addressing circuitry, use of multiplexing, use of a processor, receiving data from an external system, providing commands to the amplifiers, current limiting, frame commands, and reducing power consumption.

Gullapalli also teaches the use of piezoelectric elements as actuators for the mirror.

Note col. 2, lines 49-53; col. 5, lines 53-65; claims 3 and 11 in regards to the use of piezoelectric elements. Also see the abstract, figures, col. 1, line 61 to col. 2, line 42; col. 5, line 10 to col. 6, line 59; col. 9, lines 24-48; and the claims.

Gullapalli however does not provide a switch connected between a reference node and the reference electrode with the switch enabling/disabling the actuator and also continuously supplying a signal to a signal electrode.

Ben-Yaakov teaches continuously supplying a signal to a signal electrode (17) of a piezoelectric element, use of MOSFET switches and diodes, and use of a switch for enabling/disabling connected between a reference node (ground ) and a reference electrode ( 13,14 ) of a piezoelectric element. Ben-Yaakov specifically teaches that this arrangement allows soft switching, lowers switching losses, increases efficiency, and uses lower voltages. Note that the MOSFET and diode combination of Ben-Yaakov inherently provides two switches, but only the FET is selectively controllable. See the figures; page 2, lines 24-30; page 8, lines 16-29; page 8, line 30 on. Note in particular page 11, lines 5-14.

It would have been obvious to one of ordinary skill in the art to modify Gullapalli in view of Ben-Yaakov and continuously supply a signal to the signal electrode(s) of the piezoelectric actuator(s) of the mirror and control the switching between the reference node and reference electrode(s) of the mirror array so that lower switching voltages could be used, decrease switching losses, and increase efficiency as expressly taught by Ben-Yaakov.

5. Claims 14, 35, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gullapalli 6,424,076 in view of Ben-Yaakov WO 00/25368 as applied to claims 1-10, 12,13,15-17,21-31,33,34,36-38,42,43, 45-51, 53, and 55-62 above, and further in view of Angelbeck et al. 4,091,274.

Gullapalli teaches a deformable mirror system, connecting different actuators of the mirror to different amplifiers, use of addressing circuitry, use of multiplexing, use of a processor, receiving data from an external system, providing commands to the amplifiers, current limiting, frame commands, and reducing power consumption.

Gullapalli also teaches the use of piezoelectric elements as actuators for the mirror. Note col. 2, lines 49-53; col. 5, lines 53-65; claims 3 and 11 in regards to the use of piezoelectric elements. Also see the abstract, figures, col. 1, line 61 to col. 2, line 42; col. 5, line 10 to col. 6, line 59; col. 9, lines 24-48; and the claims.

Gullapalli however does not provide a switch connected between a reference node and the reference electrode with the switch enabling/disabling the actuator and also continuously supplying a signal to a signal electrode.

Ben-Yaakov teaches continuously supplying a signal to a signal electrode (17) of a piezoelectric element, use of MOSFET switches and diodes, and use of a switch for enabling/disabling connected between a reference node (ground ) and a reference electrode ( 13,14 ) of a piezoelectric element. Ben-Yaakov specifically teaches that this arrangement allows soft switching, lowers switching losses, increases efficiency, and uses lower voltages. Note that the MOSFET and diode combination of Ben-Yaakov inherently provides two switches, but only the FET is selectively controllable. See the figures; page 2, lines 24-30; page 8, lines 16-29; page 8, line 30 on. Note in particular page 11, lines 5-14.

It would have been obvious to one of ordinary skill in the art to modify Gullapalli in view of Ben-Yaakov and continuously supply a signal to the signal electrode(s) of the

piezoelectric actuator(s) of the mirror and control the switching between the reference node and reference electrode(s) of the mirror array so that lower switching voltages could be used, decrease switching losses, and increase efficiency as expressly taught by Ben-Yaakov.

Gullapalli and Ben-Yaakov however do not specifically state that the processor performs adaptive optics computations or teach the use of plural processors.

Angelbeck et al. teaches that a processor can perform adaptive optics computations. Angelbeck also teaches the use of plural processors. See the abstract; figures; col. 1, line 65 to col. 2, line 32; col. 3, line 11 to col. 4, line 46; and col. 5, line 51 to col. 6, line 52.

It would have been obvious to one of ordinary skill in the art to modify Gullapalli and Ben-Yaakov in view of Angelbeck and use the processor to perform adaptive optics computations to provide a more compact system with increased flexibility.

Further it would have been obvious to one of ordinary skill in the art to modify Gullapalli and Ben-Yaakov in view of Angelbeck and use plural processors this would allow ease in remote control of the system or allow division of the work tasks among simpler processors.

6. Claims 58, 65, and 69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 58, line 2, "the switches " lacks a proper antecedent basis. It is suggested that "the" be deleted .

In claim 65, line 2, and claim 69, line 2, " the command frame " lacks a proper antecedent basis. It is suggested that " the command frame " be changed to -- a command frame -- in both claims.

7. Claims 65 and 69 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. Claims 11,18-20,32,39-41,44, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 63,64,66-68,70, and 71 are allowed.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ben-Yaakov 6,747,391 corresponds to WO 00/25368 but does not qualify as prior art, but does reference the WO document which qualifies as prior art.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven R Garland whose telephone number is 703-305-9759. The examiner can normally be reached on Monday-Thursday from 6:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 703-308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.



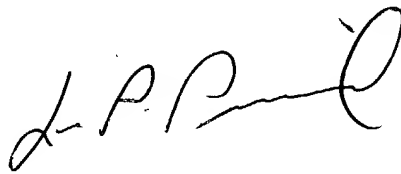
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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SRG

Steven R Garland  
Examiner  
Art Unit 2125

A handwritten signature in black ink, appearing to read 'L. Picard', with a stylized flourish at the end.

LEO PICARD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100